

of his asthma. It ran a course typical of many patients admitted to hospital for their first severe exacerbation. Anxiety, personality, allergy, and infection were all factors. Our failure to relieve his symptoms promptly resulted in increasing lack of confidence in his medical attendants and in his own ability to recover.

The prompt relief of a patient's symptoms relieves the tension and anxiety of those who surround him, whether relatives at home, or the nursing and medical attendants in hospital. The patients who are not anxious and exhausted respond more easily to the treatment of the other contributory factors such as infection and allergy. Some patients have a robust personality or are less sensitive to the terror and discomforts of an asthma attack and go through life determined to fight it out, losing little time from work or recreation, whereas others seem to find in their asthma a ready escape from the realities of life. I think our patient was one of the latter. While in hospital *Candida albicans* was repeatedly isolated from his sputum and thrush lesions appeared in his mouth and throat. It was not until this cleared after treatment with nystatin, both orally and by inhalation, Natamycin inhalations, and potassium iodide mixture that his asthma really began to improve. *Candida* was not isolated again until his last admission. I consider this infection was a contributory factor to the persistence of his asthma throughout 1966 and his relapse in late 1967. Incidentally, he gave nil reactions to all allergy skin tests except to intradermal *Candida*.

While out of hospital it appeared to me that his asthma had been controlled. I was therefore surprised to learn that you had such a difficult time with him. At his fifth and last admission to hospital his personality had deteriorated considerably. He was withdrawn, apathetic, and depressed. Determined efforts were made by medical and nursing staff

to get through to him and enlist his interest and co-operation, but with little effect. However, the comments of the nursing staff on the day before the fatal weekend was "lethargic and unco-operative." In an attempt to relieve the situation and boost his morale he was allowed to go home for a few hours, during which time he was taken to the accident department. But he was found to be dead on arrival and a postmortem showed that he had had a pulmonary embolus. His determination to live had gone by the first day of his last hospital admission and no drug or other therapy would have saved him.

We must obtain and keep our patient's confidence from the first attack of asthma for which our help is sought. With the drugs now available—steroids, corticosteroids, disodium cromoglycate, antibiotics, a bronchodilator given with a positive pressure respirator (either given separately or together as appropriate and in adequate dosage)—most attacks of asthma may be relieved in a few hours. The treatment may have to be repeated, but if the attacks are short-lived the patient's confidence is maintained. Many patients are timid about seeking early advice and many doctors are hesitant about using adequate amounts of drugs, particularly steroids.

Glossary

<i>Franol</i>	containing ephedrine hydrochloride, theophylline, and phenobarbitone.
<i>Choledyl</i>	Choline theophyllinate.
<i>Alupent</i>	Orciprenaline.
<i>Natamycin</i>	Pimifucin.

Medical History

Medical Teaching in St. Andrews University 1413-1972*

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British Medical Journal, 1972, 3, 38-41

By the Universities (Scotland) Act 1966 the University of St. Andrews ceased to hold qualifying examinations in medicine and to grant degrees in medicine other than to students who matriculated before the appointed day. The last medical graduation takes place this year. Up to 1862 St. Andrews granted 3,375 doctorates in medicine—a remarkably high proportion of British medical degrees at that time. The M.B. was introduced in 1860 but few took this qualification until clinical teaching started in Dundee in about 1900. Thereafter more than 3,000 students qualified M.B. St. Andrews and a proportionate number of higher degrees were awarded.

Papal Bull

Medical teaching under the aegis of St. Andrews began with the original foundation of the university, ratified by a bull issued by Pope Benedict XIII from Avignon in August 1413. It was decreed that the "studium generale" should include "Theology, Canon and Civil law, Arts, Medicine and other lawful faculties." This mediaeval organization, based on that of the University of Orleans, was to consist of students and masters. Some of the early masters may have professed medicine, but at first teaching was sporadic and probably linked more with astrology than with clinical practice. Although the ecclesiastical foundation most certainly offered some accommodation for the sick, in general there was more interest in the soul than in the body.

In the mid-fifteenth century William Schevez, who had been a student at St. Andrews, returned as a doctor of medicine of Louvain. He rose successively to Archdeacon in 1474 and to Archbishop in 1478. He was physician to James III but whether or not his episcopal and political activities gave him time to teach medicine is uncertain. He did at least found a library, and one of his medical books survives. It was not unusual for a high

*An abridgement of a paper for the occasion of the last medical graduation at St. Andrews, 30 June 1972.

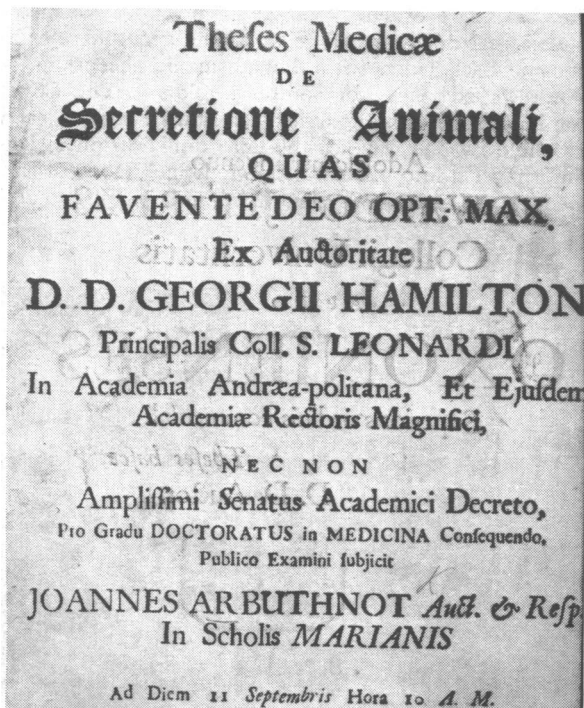
dignitary of the church to practise medicine at that time. Although this northern seat of learning may seem to have been isolated from European influences, in fact the church ensured that there were contacts and that through these contacts the more advanced medical ideas of France, Germany, and Italy could filter.

In 1551 Hamilton, Archbishop of St. Andrews and the power behind the Scottish throne, became progressively ill with asthma and bronchitis (and perhaps from his dissolute habits). An urgent summons was sent to the eccentric but able physician Cardano of Florence. Cardano made the tedious and difficult journey to Scotland, and with a vigorous regimen of simple diet, exercise, and fresh air and with a quite brilliant, but perhaps fortuitous, insistence that feather pillows should be abandoned, he cured his patient.

At the Reformation the organization of the Scottish universities was refashioned. John Knox in 1560, in his first "Book of Discipline," proposed that of the three universities, St. Andrews, Aberdeen, and Glasgow (Edinburgh was not yet in existence), St. Andrews should be "first and principal" and alone should have a faculty of medicine. This proposal was not carried out but perhaps hints that at the time the university had some reputation in the teaching of medicine. A medical chair was not regularized until 1721. The Duke of Chandos offered to endow a chair of eloquence, but the university transmuted this to a chair of medicine and anatomy. (In time the Chandos chair became that of physiology.)

Early M.D.s

Despite the somewhat inadequate academic cover for the teaching of medicine before 1721 the university had already begun to grant a doctorate in medicine. Little is known of the regulations for this degree but initially a thesis was demanded. The first recorded M.D. is John Arbuthnot (1667-1735) in 1681 (see Fig.). He was distinguished as a physician to Queen Anne and held the office of censor in the College of Physicians of London. He wrote widely on medical subjects and, a friend of Pope and Swift, was prominent in literary circles. He was an ardent writer of political pamphlets, some scurrilous, including one entitled "The Art of Political Lying."



M.D. thesis submitted to St. Andrews (1681) by John Arbuthnot (Reproduced by courtesy of the Trustees of the British Museum.)

During the next 150 years a stream of M.D.s flowed from St. Andrews. The university cannot be absolved of a certain pecuniary interest and of some laxity. The regulations were often indeterminate, and it was possible to obtain the degree by the recommendation of two other M.D.s (of any university) and payment of the requisite fee without the candidate coming near St. Andrews. In the eighteenth century medical qualifications were vague, and there was an attraction in the acquisition of something so distinguished as a doctorate. It was difficult to gain a doctorate elsewhere in Great Britain. Oxford and Cambridge awarded these but there were usually residential rules and always denominational restrictions. Some foreign degrees were easier to acquire but involved expensive travel and a period of residence in the university concerned. Edinburgh did not establish regulations for an M.D. until 1783 and demanded three years of university residence of which one had to be spent in Edinburgh. Aberdeen, and later Durham, joined with St. Andrews in offering the degree without a residential qualification, but the St. Andrews degree proved the most popular. Perhaps the examination, when there was one, was easier, but a review of the graduates of the eighteenth century and early nineteenth century does suggest that an élite was attracted.

Robert Whytt took the St. Andrews M.A. in 1730 and the M.D. in 1737. He became professor of theory of medicine in Edinburgh 10 years later, and in 1763 president of the Royal College of Physicians of Edinburgh. John Brown qualified M.D. in 1779. He had become the teaching rival of the great Cullen, but by his unorthodoxy he incurred the wrath of the examiners in Edinburgh. He evolved what was to be known as the Brunonian theory. This quite simply attributed all diseases to either overexcitement or underexcitement of the tissues, and divided patients into the sthenic and the asthenic. The idea was rather shaky but for many years greatly influenced medical thought, particularly on the Continent.

Busick Harwood graduated M.D. in 1790. Harwood became professor of anatomy in Cambridge in 1785, professor of medicine in 1800, and was knighted in 1814. Although maligned by some of his contemporaries his published lectures reveal an able teacher and practical anatomist—not least in his insistence on the value of comparative anatomy. Edward Jenner was one of the most distinguished graduates of this period. Trained and stimulated by his friend John Hunter he combined throughout all his professional life general practice in the country and the pursuit of the study of natural history. His intense curiosity and powers of observation led him to one of the most prominent medical discoveries of the age, the successful vaccination of man against smallpox. In 1792 while he was in practice in Cheltenham, having briefly deserted his country practice, he sought for an increase in prestige by applying for the St. Andrews M.D. The university slipped up a little by recording him as Dr. Jennings but may be forgiven in adding one of such lustre to the roll.

There were some foreign graduates, and the most unexpected was Jean Paul Marat, who became M.D. in 1775. After studying medicine in France he came to London and then to Edinburgh. There is no record that he visited St. Andrews; probably he merely sent the fee and the requisite recommendations. He returned to France to achieve some reputation as a physician although he was thought by many to be a quack. Medical practice was then deserted for his revolutionary activities, terminated by an undignified end in his bath. John Collins Warren came to study in Edinburgh, as did so many young American surgeons and physicians of the time. He graduated at St. Andrews in 1801, probably without examination. He returned to his own country to become a most distinguished professor of anatomy and surgery in Boston and was the first surgeon to operate under ether anaesthesia, administered by William Morton, in November 1846.

These are only six diverse characters who appear in the long list of early M.D.s. There are many others of distinction whose names adorn the rolls of the Royal Colleges of Scotland and England and have a place in medical history.

Criticism and Standards

By the beginning of the nineteenth century there is no doubt that the degree was subjected to much criticism. A certain slackness may have been due to the variable enthusiasm and ability of those appointed to the chair of medicine. Thomas Simson held the chair from 1722 to 1764. He was of great repute and some originality, not least he broke the established custom of lecturing in Latin. James Simson, his son, followed as professor from 1764 to 1770 but contributed little. His successor James Flint, from 1770 to 1810, was also ineffective. Robert Briggs was appointed from 1811 to 1840. His main interest was in chemistry, and he taught little medicine or anatomy. In his time, however, the regulations for the M.D. were more explicitly stated. A candidate had to be over 21 and of unexceptionable moral character. He was required to produce certificates of attendance for four years of instruction at accredited universities or colleges. If he already held a diploma from London, Edinburgh, Glasgow, Aberdeen, or Dublin some exemptions were allowed, but most had to sit a written and oral examination.

The examining board consisted of the St. Andrews professor of medicine and externals from Edinburgh or Glasgow, including such able men as the surgeon Robert Liston. The St. Andrews M.D. at that time was a qualifying degree, and this was one of the main grounds for continued criticism; that a university with no clinical teaching and no hospital should award a medical diploma and that the graduate did not require to spend any period in study at the university granting the degree (the same criticisms could at times be applied to Oxford and Cambridge). Much of the opposition came from the royal colleges, who feared a reduction in income if too many candidates sought the St. Andrews degree rather than the college diplomas.

In fact, after 1825 few candidates attained the St. Andrews M.D. without already possessing an initial diploma. To the general practitioner the degree offered a unique and valuable opportunity for higher study and advancement. The degree was popular, too, among the large proportion of British doctors who served in the army or navy for whom there was otherwise no way of self-improvement. From 1825 the examination was of a reasonable standard. The failure rate was significant and did not suggest that anyone who was unprepared could pass easily. Although the examination was made more stringent the criticisms continued. The *Medical Times* in 1845 recorded "St. Andrews, the notorious St. Andrews, now drives so very thriving a diploma trade . . ." and, worse, the university was stigmatized "the unfortunate virgin of the North; because she is without those precious ornaments, a medical school or a hospital, is considered a worthless strumpet, wooing the medical profession to her embraces only that she may dip her fingers into their breeches' pocket."

In 1841 John Reid was appointed professor of medicine and anatomy. He was a man of exceptional ability and character.

Qualified in Edinburgh in 1830 he had held various teaching appointments and had made notable contributions covering a wide field, not least in his establishment of the functions of the cranial nerves. He came to St. Andrews perhaps disappointed in that he had not gained a chair in his own school but threw himself into his new post with great zeal and enthusiasm.

Reid's tenure was short-lived, for he died in 1849. In a few years, however, he did much to remove the odium attached to the St. Andrews degree. He was succeeded by George Day, a scholar of great distinction. Reid and Day taught anatomy and medicine effectively, and both defended vigorously the right of the university to grant a medical degree, against powerful and often virulent attacks. In 1863 Day was succeeded by Oswald Bell. James Bell Pettigrew followed in 1878. Pettigrew was a remarkable man, for a while curator of the Hunterian Collection in the London College of Surgeons. Before he came to St. Andrews he was established as an authority on the mechanics of flight in birds, and it is recorded that he constructed an aeroplane with flapping wings which flew 60 feet (18 m) successfully—not with the professor on board. It was to the credit of Pettigrew that two preclinical years towards the M.B. were eventually established and recognized in St. Andrews.

New Regulations

As a result of various university commissions new regulations came into force in 1862 by which an M.B. and M.D. could be granted. For the qualifying degree of M.B. a candidate required to have trained at a recognized British school. The degree therefore had little attraction except to the occasional student who had taken a St. Andrews M.A. and then had gone elsewhere for clinical instruction. Between 1862 and 1900, when the Dundee school opened, only 13 M.B.s were awarded. The first was to John Robinson, son of a Methodist minister in Runcorn, Cheshire. He took an arts degree at St. Andrews and returned to qualify M.B. in 1862. He then practised in Runcorn until his death in 1915, and is still remembered there as a kindly eccentric who was the poor man's doctor.

Meanwhile the M.D. was restricted to only 10 a year and to qualified doctors over the age of 40. It spoke for the popularity of the degree that in the last year of the old regulations some 300 candidates presented themselves. This did not escape the notice of the critics.

The *Lancet* recorded, "336 gentlemen not satisfied that they were real doctors took flight to the generous North and have come back laden with the talismanic sheepskins which St. Andrews exchanges for Southern gold . . . The Christmas pantomimes have exhibited no such transformation scene as this. Behold by one wave of the fairy quill 336 physicians are metamorphosed into Doctors of Medicine. Henceforth duly labelled M.D. clothed in sheepskin and wearing that huge



Sir D'Arcy Wentworth Thompson, Professor of Natural History, 1884-1948



Percy Theodore Herring, Professor of Physiology, 1908-48



David Waterson, Professor of Anatomy, 1914-42



Adam Patrick, Professor of Medicine, 1923-50



John Anderson, Professor of Surgery, 1933-5

mediaeval seal carefully guarded in a round tin collar box pendant from the waist, let no man dispute these gentlemen are at last doctors."

When in 1862 the M.D. became restricted the numerous St. Andrews graduates, particularly those in London, banded together to form an association, partly to protect their interests, partly to indulge in clinical meetings, and not least as a social club. This large body, numbering 463, whose link with the university had usually been only a brief visit for the examination, demonstrated the utmost loyalty and affection for their Alma Mater. The *Lancet* of 1869 recorded, "Of a truth the doctors of medicine of St. Andrews know well how to keep the bond of their association, the cultivation of social intercourse and good fellowship." The prime mover was Benjamin Ward Richardson, who first studied medicine in Glasgow and in 1854 took the St. Andrews M.D. He achieved great distinction in medicine, contributing in particular to anaesthesia, and he fought vigorously for the preservation of St. Andrews's right to continue awarding a medical degree.

Dundee College

Towards the end of the century it became clear that the newly founded University College of Dundee was well fitted to carry a full medical school. The Infirmary, completed in 1858, could provide adequate clinical teaching. The idea was first mooted in 1874 but there was opposition in St. Andrews, particularly from the powerful faculty of arts. The principal at the time, Sir James Donaldson, did much to further the teaching of science and medicine, to raise the status of the young Dundee College, and to establish a clinical school in Dundee. Already by 1889 some medical teaching had started in Dundee, and in 1892 a preclinical course integrated with that at St. Andrews was available with, among others, Waymouth Reid teaching physiology and D'Arcy Thomson zoology. Indeed the *Lancet* in 1885, with some prescience, recorded that the hope of establishing a medical school in Dundee "had taken more definite form with the appointment of Mr. D'Arcy Thomson a distinguished graduate of Cambridge." Already, too, there was some unofficial teaching of clinical surgery by Dr. McEwan, later to become the first professor of surgery.

In April 1897 regulations came into force by which the university could award three degrees, M.B., Ch.B., M.D., and Ch.M., and Dundee was recognized for full clinical instruction. The conjoint medical school had three components, pre-clinical schools in both St. Andrews and Dundee and the clinical school in Dundee.

From small beginnings the compact clinical school in Dundee made rapid progress. The output of medical graduates was at first small, and in the earlier years included a higher proportion of women than in most universities. In the final analysis any success which came to the new school must be attributed to the quality of the teachers. To the preclinical school in Dundee came Waymouth Reid, F.R.S., and professor of physiology from 1889 to 1935. He was a Cambridge graduate of great distinction, as was D'Arcy Thomson, who held the chair of zoology in Dundee from 1884 to 1917, when he moved to St. Andrews. Anatomy was taught by John Mackay until succeeded by Rutherford Dow in 1925.

The clinical professors were almost all trained in Edinburgh and Glasgow and brought with them the long-established traditions and expertise of these great schools. Robert Muir served briefly in pathology until, as Principal Donaldson observed, "Glasgow University, recognising his extraordinary merits, carried him off." Thereafter the chair of pathology was held successively by Lewis Sutherland and Daniel Cappell, one of Muir's most distinguished disciples. The dynamic William Tulloch, a St. Andrews graduate in 1905, taught bacteriology from 1921 to 1962. The first professor of medicine was Alexander Stalker followed by Adam Patrick in 1923, dignified

and scholarly and a fine teacher. He was succeeded in 1950 by Sir Ian Hill. Surgery was well served by David McEwan, who as one of the original consultants in the infirmary did so much to establish clinical teaching in Dundee. Turton Price followed in 1919. In 1933 John Anderson became professor, a surgeon of international reputation remembered by all his students with particular affection. His untimely death in 1935 at the age of 49 was a tragedy for the school. Richard Charles Alexander then followed to hold the chair until 1951.

These and many others built up their departments effectively over the years, and not only was the essential undergraduate teaching maintained but postgraduate instruction and research activities were expanded and notable contributions were made in all the disciplines. The relatively small classes in the school made for a particularly close and happy contact between teacher and student, and a student medical society flourished over the years.

While the Dundee preclinical and clinical schools prospered from 1900 the preclinical school in St. Andrews, after all its vicissitudes, also expanded. Those privileged to start in St. Andrews were fortunate to have able and sympathetic teachers and recall in particular Robert Robertson, somewhat of a martinet, who taught botany, and the unique, unforgettable D'Arcy Thomson, who conducted a stimulating and all-too-short term in zoology. James Musgrove was professor of anatomy until 1914 to be followed by the cultured and charming David Waterston. An anatomist of great distinction he had also archaeological leanings. Professor Waterston and Professor Percy Herring, who held the Chandos chair of physiology for 40 years, maintained a close personal interest in their students and did much to encourage the lively Bute Medical Society. From its foundation in 1915 this became the centre of all medical student activities, and to it were invited guest speakers, many of great distinction.

Conclusion

The past 20 years has seen an expansion of all existing universities and the foundation of many new universities. There has also been a great volume of reports and commissions in medical education. It was inevitable that with the elevation of Queen's College, Dundee, to university status in 1967 the medical faculty should be transferred to Dundee, where all clinical teaching has been developed. Meanwhile, however, the preclinical school at St. Andrews is to continue, and an ambitious experiment has been initiated by which most of the output of the preclinical school at St. Andrews will be accepted by Manchester University, in a city well able to provide hospital training for additional students. In Dundee it is timely that an increase in student intake will soon be well provided for in the clinical years by the completion of a magnificent complex of a new teaching hospital to replace the old hospitals.

There may be regret at the passing of old traditions, and in particular at the demise of a medical qualification which has survived almost 400 years. The history of medical teaching in St. Andrews mirrors over this long period the evolution of the training of the doctor. In this story may be traced the early ecclesiastical influences on medicine, the long-surviving conception of the academic physician (with the acceptance of the unqualified apothecary or surgeon doing the menial tasks rather in the background), and, finally, the Medical Reform Acts of the nineteenth century with an insistence on adequate training, qualification, and registration. Today we see a more intensive vocational training, perhaps less academic but certainly more practical. To all these changes St. Andrews University has made some contribution, and if there may be regret at the end of this epoch there can be justifiable pride in the achievement of her medical graduates and a certainty that worthy traditions and values will be handed on to the virile new University of Dundee and perhaps across the border to Manchester.